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EDUCATION

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*By Mie Augier and Nick Dew*

## Introduction

*In 1758 King Frederick the Great of Prussia battled Russian forces at Zorndorf, in the first major battle of the Seven Years War. In a desperate situation, three times*

*the King sent a message to his youngest general Fredrich Wilhelm von Seydlitz: "Attack!" Seydlitz demurred, saying the time wasn't right, his cavalry would be wasted. Finally the King sent a message that if Seydlitz didn't attack immediately, the King would have his head. Seydlitz responded: "Tell the King that after the battle my head is at his disposal. But in the meantime, I will make use of it."*[2]

*"As an organization, we must anticipate changes in the operating environment and adapt to maintain an advantage. This can only be done by eliminating outdated personnel practices, adopting agile processes and continuously improving how we operate and fight, it is highly unlikely that the greatest naval strategists and leaders of our past … would be successful in todays's bureaucratic environment. Simply put, the best naval strategists that our naval education enterprise can produce today will fail without improving the organization in which they operate."–Education for Seapower Study Report*[3]

Recent enthusiasm for critical and strategic thinking as part of a renewed focus on educating future generations of Navy leaders has rightly brought attention to the need for the Navy's PME institutions to be agile and adaptive, and to the role of thinking and the education of thinkers. Preparing for the future fight means not just valuing agility in our officers, but also valuing agility in these vital organizations. It is important to consider several dimensions relevant to the recent discussions, including thinking about thinking, the importance of organizations, and what our educational institutions can do to better educate strategic and critical thinkers in the future.

An agile and adaptive response to the Education for Seapower Report (E4S) (as well as the National Defense Strategy (NDS) and National Security Strategy (NSS)) by our educational institutions can help meet the Navy's educational goals by building critical and strategic thinking into curriculum, creating new curriculum concentrated on strategic leadership, and by helping inculcate desirable learning attitudes in officers to help them learn how to be lifelong learners. At the core of these initiatives is (re)emphasizing the teaching and nurturing of *how to think* rather than what to think, educating for judgment, and cultivating broad, curious, questioning

minds – characteristics that are at the very core of critical and strategic thinking capabilities.

Some of these dimensions that are particularly germane to the E4S initiative need to be clarified. It requires putting E4S in the context of earlier debates within PME and naval education, as well as some relevant aspects from the civilian domain that are particularly suitable for educating for the 'cognitive era.'

By integrating aspects of different institutional and intellectual approaches we hope to clarify some elements of E4S in the spirit of the interdisciplinary and integrative approach that E4S calls for. We make some concrete suggestions for how our PME institutions and the Navy can proactively emphasize (critical and strategic) thinking, as well as understanding the vital role of organizing itself in ways that capture and leverage those capabilities. Our objective throughout is aligned with the E4S goal of helping the Navy build and retain an intellectual competitive advantage that is likely to be central to its strategic competitiveness in the future.

## The Character of the Contemporary Strategic Context

E4S can be understood as being a key product (along with the NSS and the NDS) of the current strategic context. All three documents emphasize some of the core dimensions of the current and likely future strategic environment that we (as a country as well as our PME institutions) ought to adapt to and get ahead of.

For the first time since the height of the Cold War the U.S. is realizing it is faced with adversaries that are providing substantive competition in many areas, ranging from big competitors who may rival our core strengths to smaller competitors who may not at first glance rival our strengths but may have studied our weaknesses. In the presence of multiple different threats our organizations need to be even more adaptive and flexible than in earlier periods when the threats were more concentrated and less diverse.[4]

In these kinds of situations, very successful strategies are two-edged swords be-

cause they tend to attract the most effort by rivals to mitigate them through imitation or countermeasures. This intensifies the competition further. In short, our rivals are also smart and we can expect that they will, like us, invest in becoming smarter.

It is in this context that E4S' proposed investments in intellectual competitive advantage need to be understood. The Navy (and DOD in general) should expect that rivals will respond to E4S by ramping-up their own investments in education *plus* take actions that attempt to mitigate any advantages the Navy gains from implementing E4S. Competitors will furthermore respond with their own escalations of this capability.[5]

As a result, to win in the cognitive age it will not be enough simply invest in education as a means of creating an intellectual competitive advantage. Easy-to-imitate educational investments will quickly get matched or neutered by adversaries. If the Navy wants to develop more sustainable advantages, it will need both to invest in intellectual advantage, *and* combine it with ways of organizing that are not easy for adversaries to counter. These complementary elements will need to be built into the very heart of our organizational capabilities, not just as simple add-ons. Fortunately, there are some examples from the past that the Navy can draw on for inspiration.

## Getting Thinking Right

Critical and strategic thinking is, and has long been, recognized as important topic within PME institutions. Key panels (e.g. the Skelton panel) and commissions have looked into this issue in the past and spurred reorganizations of PME to better educate thinkers. Furthermore, individuals engaged at all levels of our military institutions and organizations have used and been very aware of the importance of nurturing and leveraging thinking.

One outstanding example (of not just recognizing the importance of thinking but also organizing and educating for it) for the Navy comes from the reorganization of

the USMC under Gen. Gray. Gray – who is mentioned on the first page of E4S – is well-known for restructuring the USMC for maneuver warfare and building it into the heart of the organization's capabilities. This is an example of strategic leadership that specifically emphasized the role of thinking and judgment in the operating concepts and documents, and involved a substantial reorganization of the USMC to properly build and leverage thinking and judging capabilities. The transformation of the USMC of course involved other elements including significant debates in the *USMC Gazette* about these concepts (sometimes with strong arguments on all sides), an emphasis on free exercises and organizing after-action debates so that good ideas mattered more than rank, and protecting people with good ideas from being drowned by bureaucracy (usually organizations do the opposite).

A key element in the transformation was the emphasis on education, and Gray's vision for thinking and judgement. As he noted:

"My intent in PME is to teach military judgment rather than knowledge. Knowledge is of course important for developing judgment, but should be taught in the context of teaching military judgment, not as material to be memorized…The focus of effort [of PME] should be teaching through doing, through case studies, historical and present-day, real and hypothetical, presented in war-games, map exercises, and table exercises, free-play, force-on-force 'three day wars' and the like…As education progresses…the material should grow more complex, but the essence should remain the same: teach officers and NCO's how to win in combat by out-thinking as well as out-fighting their opponents."[6]

An important insight about the nature of critical and strategic thinking skills the Navy needs to educate and inculcate comes from LtGen Paul Van Riper, himself a U.S. Marine, and the first president of Marine Corps University.[7] Van Riper is, of course, well-known from the Millennium Challenge wargame for demonstrating the practical value of effective thinking.[8] And he has important advice for the type of thinking that needs to be courted and what should be avoided:

"Considerable contemporary US military literature focuses on the need to develop critical thinking skills. Unknown to the majority of its proponents is the fact that

critical thinking is a field dominated by analytical procedures. Systems analysis is at the core of many of these procedures. There are a number of organizations promoting critical thinking that endorse this analytic focus… [T]here are also numerous websites devoted to the subject that advocate analysis. I believe students need to be able to think critically, however they should shy away from the prescriptive methods advocated by those who champion a form of critical thinking building on…analysis."[9]

Van Riper's insights on the dangers of analysis (and the need for thinking) complements another well-known thinker in the defense field: Herman Kahn. Kahn, who in his era was widely viewed as a brilliant thinker,[10] famously warned against some of the pitfalls detrimental to good thinking that can arise from over-relying on analysis.[11] The evolution of Kahn's thinking about thinking is a salutary tale for the PME world. In the 1950s Kahn became RAND Corporation's top expert in Monte Carlo simulation (when he was hired his official title had been 'computer'). But Kahn's intellectual development ultimately led him to reject computational methods for thinking about the future, which "[C]ame to seem like precisely the wrong approach."[12] Among other elements, Kahn became highly critical of over-relying on models and neglecting model limitations. "Modelism," as Kahn termed it, meant that analysts were in fact more interested in their model than the real world, which stunted their ability to actually understand the real world. Another favorite target of Kahn's criticism was the use of statistical uncertainty as opposed to 'real' uncertainty. According to Kahn it is always real uncertainty that keeps commanders awake at night: "How many bombs will the enemy have? What size?…Secret bases? How good is he? Will his skill change? What surprises does he have? How good are we? …"[13] Like Van Riper, Kahn's example reminds us that in the PME world we must educate for problems that are analytically tractable where we can, but also educate for critical and strategic thinking that recognizes the inherent limitations and pitfalls of any particular analytical approach to problems.[14]

In a sense we shouldn't be surprised at the direction these practitioner-thinkers point to for the kinds of thinking Navy leaders need to excel in. The etymology of critical thinking, for example, derives from 'critic', which means to judge or be able

to discern. A study by the American Philosophical Association determined that core critical thinking skills include inference, evaluation, interpretation, explanation and self-regulation as well as analysis.[15] This means that good critical thinking is a complex bundle of skills that amounts to much more than analytical adeptness alone. The same principle applies to strategic thinking.

We highlight these issues because of the importance of getting our thinking about thinking right in the PME community. Others steeped in the military profession have long emphasized that critical and strategic thinking is not synonymous with analytic knowledge or the use of analytic tools. Because of this distinction, there are important differences between educating good analysts and educating good thinkers. Understanding this issue is easier when remembering the roots and broader context for the recent calls for more critical and strategic thinking within the defense and PME communities. The aim is to broaden a student's mind, nurture and stimulate curiosity, and develop sense of judgment. All these facets have been emphasized in reports about the recent E4S study.[16]

## Active Learning to Develop Active Minds: The Role of Experiential Learning in the Education of Thinkers

"There are no specific set of disciplines that must be mastered to be a strategist. People who think strategically come from a number of different backgrounds. What seems central is a cast of the mind that is questioning, eclectic, able to address the broadest kinds of issues and goals and able to formulate appropriate ways of achieving those goals…A high tolerance for the uncertainty that necessarily accompanies any effort to think…is required. Turning to what kind of academic study or professional training might be useful, I would start with business school training…"–Andrew Marshall[17]

"[A] most urgent national security task before us today is to intellectually prepare our leaders for … uncertainty, by equipping them with a strategic framework of how to think about the future."–Education for Seapower Report[18]

Having discussed briefly some initiatives and ideas that were useful thinking in the

past, we continue with a few suggestions on how to educate with an emphasis on thinking for seapower. Our proposal is that developing active minds is best done through active learning approaches. Two that are particularly worth mentioning are wargaming and case studies.

The use of cases as a teaching method has an ancient history. Arguably, this approach has been used in PME at least since von Moltke encouraged debate of scenarios in the Prussian academies in the late nineteenth century (and, informally, probably much longer). In the Prussian academy model, students were posed with scenarios, invited to suggest solutions to them, and discussed these collectively. Students were expected to show initiative and disagreement was presumed, even with the instructor, who was understood to be a comrade among peers.

Cases have been widely adopted in business schools in the last several decades, where they likewise encourage a combination of student initiative, disagreement, and vicarious learning from peers. The case methodology can be adapted for much wider use within the PME community as well. A key idea in cases is to help students improve in *how* to think, not *what* to think. It can be difficult for educators used to professing (based on carefully manicured and planned slide decks) to adopt case teaching as it requires that teachers be comfortable with the vagaries of an evolving class discussion. However, cases come with a prime benefit in that they give students ample opportunities to practice thinking through difficult problems and issues, and debating and directly experiencing how their peers think about them. There few methods that give students as many opportunities to practice thinking for themselves on a diverse range of issues in a limited amount of time.

The general point of wargaming and cases is that both are methods of active learning. For sure there are also other methods of active learning (simulations come to mind). In our experience case studies are one that works very well, but we would also encourage PME institutions to experiment with alternatives in an effort to discover what methods are most effective. Cases can either be decision forcing (What are you going to do now?) or reflective (What went wrong? What would you have done differently?). Both work well and a mix is probably optimal.

## Conclusion

We have elaborated some central aspects of educating and inculcating good thinking in future naval leaders, in line with E4S' insights into future Navy competitive advantages. As noted, intellectual competitive advantages are subject to rivalry, and it would be naïve to think that U.S. rivals are going to sit on their hands and allow the U.S. to establish an uncontested lead in this area. Instead, we must think critically and strategically about how we educate for thinking, and anticipate that our rivals will compete vigorously in this domain, just as they are doing in others such as shipbuilding and advanced technology development.

E4S, in pointing toward the importance of thinking, ought to lead our PME institutions to reflect on how they can better educate for this key skill. How do their curriculums support this aspect of E4S and, in turn, the NDS and NSS? How can they better adapt to the Navy's emerging needs, or get ahead of those needs? How can our PME institutions align their own internal thinking and organization to deliver the vision of E4S?[19] Hopefully, such issues will be a central element in the development of the naval university system going forward.

Finally, in order to realize the potential of its intellectual investments, it is imperative for the Navy also to be *organized* to better leverage talented thinkers (both individual and teams) than our rivals are. This entails identifying ways to combine intellectual resources (which are largely replicable) with organizational capabilities that are hard for rivals to imitate. The way the Navy puts its intellectual assets to use depends heavily on these organizational factors. It will do no good to have the Navy's exceptional strategic thinkers exhausted by the inertia of a Navy organization that is well adapted to yesterday's strategic environment, but not tomorrow's. This means that the realization of E4S depends on more than the Navy's PME institutions delivering the education of tomorrow. It also depends on the Navy getting itself organized to best leverage the strategic thinking capacity its PME institutions help to deliver. It will take the coupling of both intellectual and organizational resources to generate the kind of competitive advantages the Navy seeks – ones that

cannot be immediately imitated by rivals.

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# References

[1] We are grateful to the late Andrew Marshall for helping us shape our thinking on the topic and encouraging the writing in the first place; and to Gen Al Gray (USMC, Ret), Capt Karl M. Hasslinger (USN, Ret) and VADM Ann Rondeau (USN, Ret) for comments on earlier versions. Any remaining errors were produced without help. We also would like to dedicate this essay to the memory of Andrew Marshall. His ideas and legacy gives us much to build upon and learn from in the future.

[2] p.169 in Jörg Muth (2011) Command Culture: Officer Education in the U.S. Army and the German Armed Forces, 1901-1940, and the Consequences for World War II.

[3] Education for Seapower Study Report (E4S), p. 11-12

[4] In thinking about E4S it is also important to highlight the dynamic nature of this competition, and its implications. A defining characteristic of near-peer competition is that it is a state of continual rivalry in which any action one side takes to put themselves ahead in the competition is subsequently imitated or countered by competitors. Every solution becomes the rivals' problem, which sets-up a competitive cycle in which leadership tends to be a temporary zero-sum game. The competition is ultimately defined by the capabilities of the competitors; their available organizational and financial resources, and the strategic choices they make about where to invest their scarce organizational and financial capital.

[5] In fact, some might say that our competitors for quite a while have emphasized the educational angle at least as much as we — e.g. Chinese upping educating and also having education as part of their country's measure of national power. We can only hope that we are studying their educational initiatives well too (as understanding how opponents think is key to trying to understand *and anticipate* what they might do).

[6] Commandant of the Marine Corps to Command General, Marine Corps Combat Development Command, "Training

and Education," October 10, 1988.

[7] Van Riper has reflected on his own experiences and the importance of education; see Paul K. Van Riper, "The relevance of history to the military profession:  an American Marine's view," in *The Importance of History to the Military Profession*, eds. Williamson Murray and Richard Hart Sinnreich (New York:  Cambridge University Press, 2006).

[8] Micah Zenko, Millennium Challenge: the real story of a corrupted military exercise and its legacy. War on the Rocks, November 5, 2015.

[9] Paul van Riper, 2013, "The identification and education of Army strategic thinkers"

[10] B. Bruce Briggs, Supergenius: The Mega-Worlds of Herman Kahn (New York, 2000). Kahn is the acknowledged father of scenario planning.

[11] Kahn and Mann, 1957, Pittfalls in Analysis.

[12] Williams, World Futures 2016, p.480.

[13] Ibid p.17

[14] Understanding wicked and genuinely ill structured problems takes thinking and synthesizing information from many different domains and angles; an approach perhaps best illustrated in John Boyd's "Patterns of Conflict" lecture.

[15] Critical Thinking: A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction, Peter Facione, November 1989.

[16] https://news.usni.org/2018/08/16/35846

[17] Andrew Marshall (1991), "Strategy as a profession for Future Generations" (In "On not confusion ourselves: Essays on National Security Strategy" edited by A. W. Marshall, J.J. Martin and H. Rowen (Boulder: Westview Press)

[18] E4S report, p. 9

[19] This is an argument for another day – but examples of central reports that in the past inspired constructive change in educational institutions are the Flexner report in medical education and the Gordon Howell report in business school education.

Featured Image: A graduating student of the Eisenhower School at the National Defense University shakes the hand of

Chairman of the Joint Chiefs Gen. Joseph Dunford. (NDU photo)



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